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AUTHOR	Brown, Bettina Lankard
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ABSTRACT

Teachers responsible for transforming their vocational education programs into career and technical education (CTE) programs need to concentrate on ensuring programs' technical and academic rigor, engaging in collaboration in school and in the community, keeping current through professional development experiences, and extending learning beyond classroom walls. The following are among the ways teachers can transform their vocational programs into successful CTE programs: (1) include clearly articulated course outcomes and align content with national or state occupational skill standards; (2) use the context of the workplace and the community to teach academic and technical skills; (3) assume the role of coach or mentor and encourage students to create their own knowledge from experiences beyond the classroom; (4) collaborate with the community in creating learning experiences that engage students in real-life, hands-on active learning; (5) engage in a variety of professional development experiences, including staff development, work-based experiences, internships, externships, industry tours, Web-based courses, and professional associations; and (6) provide students with opportunities to work with adults other than teachers in community and work settings. Effecting change requires that teachers be open minded about adopting new ways to teach, ensure that their programs are current, and direct students' academic and skill development to workplace requirements. (Contains 11 references.) (MN)

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ERIC Clearinghouse on Adult, Career and Vocational Education
Ohio State University
Center on Education and Training for Employment
1900 Kenny Road
Columbus, OH 43210
Telephone: 614-292-7069; **Tollfree:** 800-848-4815; **FAX:** 614-292-1260
email: ericacve@postbox.acs.ohio-state.edu; **WWW:** http://ericacve.org

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PRACTICE APPLICATION BRIEF NO. 21

by Bettina Lankard Brown

2002

New Wine in New Bottles: Transforming Vocational Education into Career and Technical Education

The department name has been changed; the program identified and piloted. Now how can the practice of each teacher be changed to reflect the new philosophy and ethos of career and technical education? How can teachers ensure that their programs are technologically up to date, reflect the integration of rigorous academics with knowledge and skills needed for multiple careers, lead students to personally relevant and well-planned career pathways, and garner the respect of the community? This ***Practice Application Brief*** identifies practices that can help career and technical education (CTE) teachers facilitate change at the classroom level.

Ensure Technical and Academic Rigor of Programs

Effective career and technical education programs clearly articulate course outcomes and align content with national or state occupational skill standards. These standards, endorsed by business and industry, are designed to prepare students with skills that reflect job market requirements and address all aspects of the industry, not just skills required for single jobs. Curricula developed around these standards offer teachers a variety of strategies for improving standards in their classrooms.

Ohio has developed a set of cluster guides based on the Integrated Technical and Academic Competencies (ITACS) that employers have identified as necessary for work: solving problems and thinking skillfully, communicating effectively, applying technology, and so forth. The curriculum for each of these cluster guides follows the same format. Each begins with a workplace scenario, engages students in a problem-solving approach to learning, and integrates technical and academic competencies from state and national standards. Through the scenarios outlined in the guides, students are led to construct knowledge by engaging in learning experiences and problem-solving activities that have value beyond the classroom (Vocational Instructional Materials Laboratory 1999).

Projects that use the context of the workplace and the community to teach academic and technical skills offer another strategy for ensuring program rigor. Students learn best in the context of real life experiences. Sussex Technical High School in Georgetown, Delaware; William H. Turner Technical Arts High School in Miami; and Michael E. DeBakey High School for Health Professionals in Houston are three schools that combine rigorous academic coursework with career and technical education through hands-on activities set in real-world contexts (Roberts 1999). In this way, "students can combine what they're learning in the field or laboratory with basic writing, science, and math skills" (p. 22).

"Curriculum integration, contextual and applied learning, tech prep, and team teaching have increased the academic rigor of career and technical education disciplines" (Lozada 1999, p. 16). Traditional instructional roles, however, do not support these strategies for applying academic and technical understandings to real-world problems. To involve students in learning experiences that are situated in certain physical and social contexts and require interaction with other people, teachers must assume the role of coach or mentor, encouraging students to create their own knowledge from experiences beyond the classroom. When CTE instruction supports what is known about intelligence, brain development, cognition and learning, it gives credence to initiatives that integrate academic education with career and technical education (Reese 2002).

Engage in Collaboration in School and in the Community

School change requires collaboration among teachers of different disciplines. As part of the High Schools That Work initiative of the Southern Regional Education Board (SREB), academic and career and technical education teachers work together to plan and deliver integrated instruction. At Wren High School in South Carolina, for example, faculty from different disciplines worked together to plan and implement a project that engaged students in producing a televised school news program and another in which math and social studies students conducted job shadowing in each of four career cluster majors (SREB 1996).

Collaboration with the community in creating learning experiences that engage students in real-life, hands-on active learning is an essential element of successful CTE programs. Community agencies and businesses can serve as sites for service learning projects and work-based learning opportunities such as internships. At Crescent Valley High School in Corvallis, Oregon, students in an advanced field biology class conducted an 8-month study of Bald Hill Park's biological and cultural resources (SREB 2000). The project was designed to combine academic study and community service. Mentors from the community worked with students as they investigated such topics as birds, mammals, insects, geology, cultural history, streams, and plants. After their experiences, students wrote a guide highlighting the information they discovered in their investigations. In support of this project and its outcomes, sections of guide were displayed at the park entrance.

Business-school partnerships have tremendous potential for helping teachers to ensure that the skills being taught are relevant to today's workplace. Brotherton (2001) presents examples of school partnerships with private high-tech companies. In the Stillwater (Oklahoma) School District, a high-tech initiative has resulted in the installation of a huge fiber optic network that connects school buildings, city buildings, and the hospital. "A software company entrepreneur donated $40,000 toward putting a wireless local area network in the high school and purchasing 40 Dell Laptop computers" (p. 19). Students use the laptops in courses on website design, where they learn hypertext markup language and engage in real-world projects, such as building websites for the school and community groups.

Keep Current through Professional Development Experiences

Participating in staff development is one way that academic and CTE teachers can work together to learn new roles. "In an SREB survey of 8,000 career tech teachers last year, about 45 percent said they needed to update their own mathematics skills before they could teach rigorous math content in the context of their specialities" (Lozada 1999, p. 18).

Some teachers are taking advantage of work-based experiences as a means of gaining knowledge of jobs and industry needs, connecting with employers, acquiring equipment and resources, and enhancing their credibility in the community (Ries 1999). "Kathleen Steudle, a drafting teacher at Farmington High School in Farmington, Michigan, interned at Ford Motor Company and toured local industries through a 'Technology in the Workplace' course offered in cooperation with Eastern Michigan University" (p. 16). Through this and a job shadow-

ing experience at an architectural firm, she learned new technology, gained insights into the latest construction techniques and materials, and observed real problems the firms encountered that she could modify for use in the classroom.

Other means of keeping current in the midst of constant change is through internships, externships, and industry tours. Each of these experiences gives teachers insight into workplace skills needs, specific ways in which academic skills are used on the job, and a variety of real-life applications that they can bring back to the classroom.

The Internet is another avenue for enhancing teacher education, as well as offering an alternative teacher licensure program. The Ohio State University has developed graduate-level courses in career and technical education for Web-based delivery. Having technology infused into a teacher education program contributes to teachers' technical skill development. "By completing a Web-enhanced course, they are gaining pedagogical knowledge associated with teaching while developing important technological skills" (Zirkle 2002, p. 25).

Joining professional associations, networking with other teachers, and reading professional literature are additional professional development strategies that can enhance a teacher's ability to deliver instruction in new ways. Technology can facilitate many of these linkages as well. For example, by becoming distance learners, teachers can improve their own technological skills as well as learn ways to use technology as a teaching tool (Maurer 2000).

Extend Learning beyond Classroom Walls

Students should have opportunities to work with adults other than teachers in community and work settings. Projects must be meaningful to the student and ones that an adult might tackle at work or in the community. A schoolwide project at Caldwell Parish High School in Columbia, Louisiana, "strengthened connections between vocational and academic disciplines and helped students and teachers to focus on the local forestry industry, one of the community's two largest employers. Students in the project learned about job opportunities, industrial practices, forestry equipment, and the uses of timber and timber products. They conducted research and used mathematics and science in solving actual problems (SREB 2000, p. 15). The project, supported by local businesses, brought foresters into the classroom to make presentations about their jobs and places of work (ibid.).

At Statesboro High School in Statesboro, Georgia, the family and consumer science curriculum engages students in a community childcare and preschool program to give them hands-on, workplace experience. Enrolled in this lab program are four-year-olds from the surrounding community who are accepted on a first-come, first-served basis. The program is designed to help students who have an interest in working with children to learn real-life applications of child development strategies, food and nutrition science, lesson planning skills, and communication strategies. It gives these potential teachers an awareness of the importance of coaching, supervision, and guidance, roles that are increasingly important in their field (Thaler-Carter 2000).

New delivery systems can also extend student experiences beyond classroom walls. The Center for Applied Academics (CFAA) in British Columbia <http://www.awal.ctt.bc.ca/> features the Applications of Working and Learning website, which provides lesson plan examples from CFAA materials as well as ideas and feedback from teachers who sign up for free (Lozada 1999, p. 18).

Conclusion

Effecting change in teaching and learning requires more than a name change. It requires teachers to be open minded about adopting new ways to teach and to be receptive to the idea that not all students learn in the same way. Because the construction of knowledge is directly tied to real life experiences in personal and social settings, teachers need to look toward proven practices for enhancing student learning and engaging in their own professional development. They must ensure that their programs are up to date and direct students' academic and technical skill development to current and future workplace requirements.

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Center on Education and Training for Employment
College of Education
The Ohio State University
1900 Kenny Road
Columbus OH 43210-1090

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